

Preliminary Amendment dated: February 16, 2007

Title: Self-Cleaning Litter Box

Applicant: Alan J. Cook, et al.

Attorney Docket No.: 330802-00004

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We claim:

1. (Currently Amended) A self cleaning litter box for use with a non-attached litter cartridge, the self cleaning litter box comprising:

a non-attached litter cartridge;

a rake assembly including a rake for combing through said litter cartridge during a cleaning stroke from a first home position to a second waste position during a cleaning stroke and returning to said home position during a return stroke;

a chassis assembly for carrying said rake assembly, said chassis also configured to receive enable said rake to communicate with an interior portion of said non-attached litter cartridge when said chassis assembly is placed over said litter cartridge.

2. (Previously Presented) The self-cleaning litter box as recited in claim 1, wherein said litter cartridge, includes a cover hinged on one end.

3. Previously Presented) The self-cleaning litter-box as recited in claim 1, wherein said rake assembly and said drive assembly is configured to travel in a single plane.

4. (Previously Presented) A rake assembly for a self-cleaning litter box, the rake assembly comprising:

a frame for carrying a plurality of spaced apart tines, said tines configured as flexible members.

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5. (Previously Presented) The rake assembly as recited in claim 4, wherein said tines are formed from metal.

6. (Currently Amended) The rake assembly as recited in claim 5, wherein said tines are configured formed with a bend defining two legs in a loop.

7. (Currently Amended) The rake assembly as recited in claim 4, wherein each pair of tines are formed from comprise a U-shaped length of wire material.

8. (Currently Amended) A litter cartridge for use with a self-cleaning litter box, the litter cartridge comprising:

A tray for receiving litter, one end portion of said tray defining a waste area
configured to be received in said self-cleaning litter box; and
a waste cover adapted to cover said waste area.

litter, said litter filling said removable generally rectangular tray to a fill line; and
a removable ~~shipping~~ cover for closing said removable tray in a storage ~~shelf~~
position, said cover removed when said cartridge is received in said self-cleaning litter
box.

9. (New) The litter cartridge as recited in claim 8, wherein said waste cover is adapted to be rotatably mounted on one end to said tray.

10. (New) The litter cartridge as recited in claim 8, wherein said litter cartridge is configured to be disposable after a single use.

11. (New) The litter cartridge as recited in claim 8, wherein said litter cartridge is configured with a separate waste compartment.

12. (New) The self-cleaning litter box as recited in claim 10, wherein said cartridge is formed from paper.

13. (New) A self-cleaning litter box assembly for use with a removable litter cartridge: comprising:

a rake assembly which includes a rake for combing through said litter cartridge during a cleaning stroke from a home position to a waste position for raking waste to said waste position during a cleaning stroke and thereafter during a return stroke returning to said home position;

a drive assembly for driving said rake assembly; and

a chassis assembly for carrying said rake assembly and said drive assembly.

14. (New) The self-cleaning litter box as recited in claim 13, further including a lift arm configured to lift a cover pivotally attached to said removable litter cartridge as said rake assembly approaches said waste end and lower said cover as said rake assembly moves away from said waste end.

15. (New) The self-cleaning litter box as recited in claim, 13, wherein said assembly is configured to carry said rake assembly so that the vertical height of said rake assembly is constant during a cleaning stroke.

16. (New) The self-cleaning litter box as recited in claim 13, wherein said rake assembly includes a plurality of tines and said tines are elevated relative to said litter cartridge at said home end.

17. (New) The self-cleaning litter box as recited in claim 13, wherein said rake assembly is lowered as said rake assembly moves away from said home end.

18 (New) The litter cartridge as recited in claim 9, wherein said litter tray is re-usable.

19. (New) The self-cleaning litter box as recited in claim 13, wherein said chassis assembly is configured to carry said rake assembly so that the vertical height of said rake assembly varies during a return stroke as said rake assembly is moved from said home end to said waste end.

20. (New) The self-cleaning litter box as recited in claim 19, wherein said rake assembly includes a plurality of generally coplanar tines and said chassis assembly and said rake assembly are configured to enable said plurality of generally coplanar tines to tilt relative to a vertical plane.

21 (New) The self-cleaning litter box as recited in claim 19, wherein said chassis assembly and said rake assembly are configured to enable said plurality of generally coplanar tines to tilt relative to a vertical plane without lateral movement.

22 (New) A self cleaning litter box assembly for automatically cleaning a separate litter cartridge containing litter, the self-cleaning box assembly comprising:

a rake assembly which includes a rake with a plurality of tines, said rake configured to be received in said separate litter cartridge and disposed over said separate litter box
and comb through said litter cartridge during a cleaning stroke from a home position and move waste to a waste position of said separate litter cartridge and to return to said home position during a return stroke;

a drive assembly for driving said rake assembly; and

a chassis assembly for carrying said rake assembly, said chassis configured to carry said rake assembly over said separate litter cartridge.

23. (New) The self-cleaning litter box assembly as recited in claim 22, wherein said self-cleaning litter box assembly is configured to enable it to be lifted vertically to remove said separate litter cartridge.

24. (New) The self-cleaning litter box assembly as recited in claim 22, wherein said chassis assembly includes a lid lifting mechanism for lifting a hinged lid .

25. (New) The self-cleaning litter box assembly as recited in claim 24, wherein said lid lifting mechanism includes a magnet configured to co-operate with metal configured in said lid .

26. (New) The self-cleaning litter box assembly as recited in claim 22, wherein said rake includes a wire frame to which said tines are secured forming a rake assembly.

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27 (New) The self-cleaning litter box assembly as recited in claim 26, wherein said rake assembly is pivotal about a pivot axis defined by said wire frame.

28. (New) The self-cleaning litter box assembly as recited in claim 26, wherein said rake assembly is mounted so that it is tilted with respect to the vertical during a cleaning stroke.

29. (New) The self-cleaning litter box assembly as recited in claim 22, wherein each pair of said tines are configured in a U-shape.

30. (New) The self-cleaning box assembly as recited in claim 22, wherein each tine is configured from steel wire.

31. (New) The self-cleaning litter box assembly as recited in claim 22, wherein said drive assembly includes a single drive motor and mechanism coupled thereto and coupled to said rake assembly for causing linear movement of said rake assembly relative to said chassis assembly.

32. (New) The self-cleaning litter box assembly as recited in claim 31, wherein said mechanism includes at least one lead screw.

33. (New) The self-cleaning litter box assembly as recited in claim 31, wherein said chassis assembly and said rake assembly are configured so that said drive motor also causes rotation of said rake about a predetermined pivot point.

34. (New) The self-cleaning litter box assembly as recited in claim 33, wherein said predetermined pivot point includes at least one stop configured in said chassis assembly.

35. (New) The self-cleaning litter box assembly as recited in claim 34, wherein a waste area is disposed adjacent to said one end and translation of said rake causes any collected waste during a cleaning stroke to be disposed into said waste area.

36. (New) The self-cleaning litter box assembly as recited in claim 22 wherein said rake is configured with a wire frame and a plurality of tines connected thereto on one end, the spacing of said tines along said wire frame being selected to be larger than the particle size of the litter to be used in the separate litter cartridge.

37. (New) The self-cleaning litter box assembly as recited in claim 36, wherein the spacing between adjacent tines is selected to be 3-20 millimeters.

38. (New) The self-cleaning litter box assembly as recited in claim 22, wherein said rake assembly includes a plurality of tines and wherein the chassis assembly and said rake assembly are configured so that the bottom of the tines is below the normal litter level in said home position.

39. (New) The self-cleaning litter box assembly as recited in claim 22, wherein said chassis assembly and said drive assembly are configured as a labyrinth seal to prevent litter from entering said drive assembly.

40. A self cleaning litter box assembly for automatically cleaning a separate litter cartridge containing litter, the self-cleaning litter box assembly comprising:

a rake assembly which includes a rake with a plurality of tines, said rake configured to be received in said separate litter cartridge and disposed over said separate litter cartridge and comb through said litter cartridge during a cleaning stroke from a home position and move waste to a waste position of said separate litter cartridge and to return to said home position during a return stroke;

a drive assembly including a drive motor for driving said rake assembly, said rake assembly configured to enable said rake to pivot to a first predetermined angle relative to a vertical axis during a cleaning stroke under the influence of said drive motor ; and

a chassis assembly for carrying said rake assembly, said chassis configured to carry said rake assembly over said separate litter cartridge,

41. (New) The self-cleaning litter box assembly as recited in claim 40, wherein said rake assembly is configured to enable said rake to pivot a second predetermined angle relative to a vertical axis during a return stroke under the influence of said drive motor.

42. (New) The self-cleaning litter box assembly as recited in claim 41, wherein the magnitude of said first and second predetermined angles are equal.

43. (New) The self-cleaning litter box assembly as recited in claim 41, wherein at least one of said first predetermined angle and said second predetermined angle is in the range of 0° to 45°.

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44. (New) A self cleaning litter box assembly for automatically cleaning a separate litter cartridge containing litter, the self-cleaning litter box assembly comprising:

a rake assembly which includes a rake with a plurality of tines, said rake configured to be received in said separate litter cartridge and disposed over said separate litter cartridge and comb through said litter cartridge during a cleaning stroke from a home position and move waste to a waste position in said separate litter cartridge and to return to said home position during a return stroke;

a drive assembly including a drive motor for driving said rake assembly, said drive assembly configured to enable said rake to pivot to a first predetermined angle relative to a vertical axis to an angled position and to travel during a cleaning stroke at said angled position under the influence of said drive motor ; and

a chassis assembly for carrying said rake assembly, said chassis configured to carry said rake assembly over said separate litter cartridge, wherein said rake and said drive assembly are configured so that said rake rotates at said waste position under the influence of said drive motor during a return stroke.

45. (New) A self cleaning litter box assembly as recited in claim 44, wherein said rake and said drive assembly are configured so that said rake rotates a sufficient amount to dump any collected waste into a waste compartment disposed adjacent said waste position.

46. (New) A self cleaning litter box assembly for automatically cleaning a removable litter cartridge containing litter, the self-cleaning box assembly comprising:

a removable litter cartridge configured with a single compartment;

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two spaced apart side rails that are adapted to rest on a generally flat surface adjacent to said removable litter cartridge disposed therebetween;

a rake assembly which includes a rake with a plurality of tines, said rake assembly carried by said spaced apart side rails and configured to be received in said removable litter cartridge and comb through said litter cartridge during a cleaning stroke from a home position and move waste to a waste area of said removable litter cartridge and to return to said home position during a return stroke; and

a drive assembly for driving said rake assembly from an initial home position to a waste position during a forward stroke and back to a home position during a return stroke.

47. (New) The self-cleaning litter box as recited in claim 46, wherein said removable cartridge is configured with a hinged lid on one end for covering waste.

48. (New) The self-cleaning litter box as recited in claim 47, further including a mechanism for lifting said lid during a forward stroke and enabling said lid to return to a closed position during a return stroke.

49. (New) The self-cleaning litter box as recited in claim 46, wherein said self-cleaning litter box is configured so that said rake assembly does not change the vertical position during a forward and return stroke.

50. (New) The self-cleaning litter box as recited in claim 46, wherein said rake is rotatably mounted.

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51. (New) The self-cleaning litter box as recited in claim 50, further including a mechanism for causing said rake to rotate without horizontal translation at said home position.

52. (New) The self-cleaning litter box as recited in claim 46, further including a top housing for protecting said side rails and said drive assembly from contamination.

53. (New) The self-cleaning litter box as recited in claim 52, wherein said top housing forms a labyrinth seal but allows translation of said rake assembly.

54. (New) The self-cleaning litter box as recited in claim 46, wherein said side rails are spaced apart to enable said self-cleaning litter box to be lifted vertically to enable said litter cartridge to be removed.

55. (New) The self-cleaning litter box as recited in claim 46, wherein said removable litter cartridge includes a hinged flap on one end for covering waste in said waste area.

56 (New) The self-cleaning litter box as recited in claim 46, wherein said self-cleaning litter box is configured to stand on end.

57 (New) A method for treating waste in a kitty litter box comprising the steps of

(a) providing a kitty litter box with a cover over a portion thereof defining a waste area;

(b) configuring said kitty litter box to automatically move waste to said waste area; and

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(c) configuring said kitty litter box to automatically cover said waste area

58. A litter cartridge as recited in claim 8 further including litter.

59. A litter cartridge as recited in claim 8 further including a storage cover.

60. A litter cartridge as recited in claim 8 wherein said waste cover is configured to be installed on said tray by an end user.

61. A litter cartridge as recited in claim 60 wherein said waste cover is configured to be rotatably mounted on said tray by an end user.

62. The litter cartridge as recited in claim 8, wherein said cartridge is formed from plastic.

63. The litter cartridge as recited in claim 62, wherein said cartridge is formed from cardboard.